

Patent Claims

What is claimed is:

1. A method for minimizing the error of a measured variable, particularly a signal to be measured, using filtering at variable bandwidth, characterized in that the bandwidth is regulated on the basis of a physical criterion inherent to the method in such a way that signal changes not caused by noise are recognized as early as possible.
2. The method according to Claim 1, characterized in that the bandwidth is regulated in such a way that the variation of the signal barely does not exceed a predefined multiple of the intrinsic noise of the measuring sensor.
3. The method according to Claim 2, characterized in that the intrinsic noise is calculated from the known spectral noise output density of the measuring sensor and the bandwidth of the filter.
4. The method according to Claim 1, 2, or 3; characterized in that the difference of the signal from a version of the signal whose bandwidth is delimited more strongly is observed as a variation of the signal.
5. The method according to one of the preceding claims,

characterized in that the suitable filter is selected from a filter bank in the framework of the bandwidth regulation.

6. The method according to one of Claims 1 through 4, characterized in that instead of a filter from the filter bank, a standardized linear combination of at least two outputs of the filter bank is used.
7. The method according to one of the preceding claims, characterized in that the filter bank is a parallel circuit or a series circuit of filters.
8. The method according to one of the preceding claims, characterized in that low-pass filters are used as filters.
9. The method according to one of the preceding claims, characterized in that the absolute value of the distance of the observed filter output to at least one further filter output having lower bandwidth is observed and, if the distance between the observed filter output and the output of the at least one filter having lower bandwidth falls below a threshold value, which is a predefined multiple of the intrinsic noise of the measuring sensor, the observed filter is used to display the signal, if the distance between the observed filter output and the output of the at least one filter having lower bandwidth exceeds a threshold value, a significant change of the information component in the signal being recognized

and a filter having higher bandwidth and/or lower response time being used, whose output is displayed.

10. The method according to Claim 9, characterized in that the filter which has the lowest bandwidth of all filters whose output signals do not exceed the threshold value is used to display the signal to be measured.
11. The method according to Claim 9 or 10, characterized in that the threshold value is a multiple of the standard deviation of the intrinsic noise of the measuring sensor.
12. The use of the method according to one of Claims 1 through 11 for displaying the measured values of strain gauges, PT100 sensors, thermocouples, piezoresistive sensors, or thermal radiation detectors.